Table 4 contains the results of an economic comparison of the costs of new digital television receivers under the ATSC Standard and the proposed CICATS system. In Table 4 only the costs of the decoder subsystem are considered. The forecast shown in Table 4 is based on the following assumptions:

1) A total of 20 million television receivers will be sold each year in the U.S. over the time period considered. This is a reasonable assumption considering that the number of receivers sold annually in the U.S. has been roughly 20 million for a number of years.

2) The fraction of new receivers sold that will have built-in capability to receive the new digital television transmissions is the same as the fraction of NTSC conversions assumed by Selwyn in each given year.

3) Of the new receivers with built in capabilities for digital transmission, 80% will be low-end units and 20% will be full high-definition units. This assumption follows a similar assumption made by Selwyn.

	Total new receivers sold (000)	Low-end digital receivers sold (000)	HD digital receivers sold (000)	Total HD receivers installed (000)	Cost of new CICATS receiver decoders (000)	Total installed CICATS HD-capable receivers (000)	Cost of new ATSC receiver decoders (000)	Total installed ATSC HD-capable receivers (000)
1996	20,000	0	0	0	0	0	0	0
1997	20,000	0	0	0	0	0	0	0
1998	20,000	1,600	400	400	572,851	400	432,083	2,000
1999	20,000	1,600	400	800	405,067	800	305,529	4,000
2000	20,000	3,200	800	1,600	572,851	1,600	432,083	8,000
2001	20,000	3,200	800	2,400	405,067	2,400	305,529	12,000
2002	20,000	4,800	1,200	3,600	429,638	3,600	324,063	18,000
2003	20,000	6,400	1,600	5,200	405,067	5,200	305,529	26,000
2004	20,000	8,000	2,000	7,200	358,032	7,200	270,052	36,000
2005	20,000	9,600	2,400	9,600	303,800	9,600	229,147	48,000
2006	20,000	11,200	2,800	12,400	250,622	12,400	189,036	62,000
2007	20,000	16,000	4,000	16,400	253,167	16,400	190,956	82,000
Totals					3,956,162		2,984,007	plus all converted NTSC sets

Table 4 - Economic comparison of digital television receiver decoder subsystem costs

The comparison presented in Table 4 indicates that roughly $4 billion will be spent on digital receiver decoders through 2007 under the CICATS proposal, while roughly $3 billion would be spent under the ATSC Standard. Thus the ATSC Standard would result in a $1 billion savings for the public who will purchase digital television receivers.

It should be noted that, in the above analyses, a number of assumptions were taken *that would tend to favor the CICATS proposal*[5]. In no case were liberties taken to favor the ATSC Standard. In spite of this, the analyses clearly show that the ATSC Standard would cost consumers less money than the CICATS proposal.

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[5] In particular, the cost premium of the CICATS base layer decoder was reduced from 140% to 130%, the cost premium for the ATSC HD decoder was 550%, higher than the 500% estimated by CICATS for this item, and the cost premium for the AFD was 117%, higher than the 110% that has been projected by Hitachi America, a manufacturer of consumer electronics products.

The reasons for this are twofold. First, the CICATS base layer decoder, which must be capable of processing 18.8 Mpixels/sec will be more expensive than the AFD for the ATSC Standard, which is limited to processing 13.8 Mpixels/sec. Although it might be possible to develop reduced cost decoders for the proposed CICATS base layer, the CICATS prohibition against B frames in the base layer would impair the quality of down-sampling decoders. Second, it is well known that spatially scalable video systems place a significant cost penalty on full resolution decoders. This burden is especially steep for the CICATS proposal because of the high pixel count in the base layer.

Comparison of the benefits to consumers of the ATSC Standard and proposed CICATS system

The last column in Table 4 is very significant, in that it shows the evolution of the installed base of HD-capable receivers over time under the ATSC Standard. In this case there are expected to be 82 million HD-capable digital receivers by the end of the period, along with the several hundred million converted NTSC receivers as shown in Table 3. Of these HD-capable receivers, 16.4 million are expected to be capable of delivering full high definition picture quality.

Under the CICATS plan there would also be 16.4 million high definition receivers in place in 2007. But, in stark contrast to the ATSC scenario, these 16.4 million would be the *only* HD-capable receivers. Thus, under the CICATS scenario, it would be necessary for broadcasters to continue to transmit a multi-layered signal far into the future to avoid the problem of the majority of receivers "going black". The known inefficiency of multi-layered video coding would result in wasted bandwidth for decades.